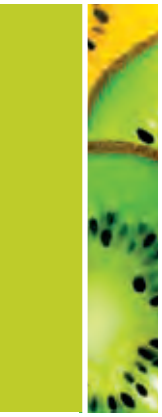

Getting pollination right

Reece Unwin - Kiwi Pollen

Supplementary pollination can help with greater fruit set, higher yields, higher dry matter, and increased seed numbers per fruit but there are some key things to remember.

Kiwi Pollen project engineer Matt Davoren servicing an ATV-Mounted PollenAid® wet sprayer.

How should I store my pollen?

Long-term storage

Pollen is a biologically active product, and how it's stored has a direct impact on its performance at pollination.

Once received, pollen should remain in an airtight, food-grade container and stored in a freezer at around -12degC (typical domestic freezer temperature). Keeping moisture out is critical, humidity is one of the main causes of pollen losing viability during storage.

When stored correctly under dry, frozen conditions, pollen can retain good viability for at least 10 years. Poor storage, on the other hand, can quickly reduce its effectiveness.

Pre-application handling

How pollen is handled before use is just as important as how it's stored long term. Frozen pollen should be thawed slowly. The best approach is to move it into a refrigerator (4–6degC) for up to 24 hours, then allow it to come up to 10–20degC in the hour before use.

Avoid rapid warming. Taking pollen straight from the freezer into warm conditions, such as leaving it in the sun or in a vehicle, can cause condensation to form inside the container. Moisture at this stage is a common cause of viability loss in the field.

Bringing pollen up to temperature gradually helps avoid condensation and reduces the risk of viability loss before application. The main thing is to keep it out of warm, fluctuating conditions until you're ready to use it.

How do I design a pollination trial on my orchard?

Many growers understand the fundamentals of kiwifruit pollination. However, how those fundamentals play

Pollen stored in sealed containers under frozen conditions.

out in the real world can vary widely from orchard to orchard. Factors such as microclimate, canopy structure, vine vigour, male plant distribution and bee activity all influence the final result.

Running a simple trial on your own orchard is one of the best ways to see whether a change in pollination practice is actually delivering value. It can help show how differences in application rates, timing, or method impacts your pollination.

A key requirement for any trial is isolation. To get meaningful results, you need to be confident that any difference you see is due to the pollination treatment, not other variables. Trial and control areas should be as similar as possible. Match blocks for cultivar, vine age, canopy structure and past performance wherever you can.

Keep the trial simple. Introduce one change only, such as pollen application rate, application method or timing. Irrigation, nutrition and pest management should be consistent across both the trial and control blocks.

Good data collection is essential.

Kiwi Pollen's commercial manager Reece Unwin.

At application, record details such as:

- Application method and pollen rate;
- Timing relative to flowering stage;
- Temperature and weather conditions; and
- Bee activity.

At harvest, focus on outcomes that reflect pollination success, including:

- Fruit set percentage;
- Fruit size and weight;
- Seed count; and
- Dry matter.

Where possible, repeat trials over more than one season. Results from a single year can be influenced by weather and flowering synchrony, so multi-year data gives a more reliable picture.

There are also existing resources available to support trial design and monitoring. See the "Where can I get more information?" section below.

What should I do if bad weather hits during flowering?

Bad weather during flowering is one of the biggest risks to successful pollination. Rain, wind and low temperatures can all limit both natural bee activity and the effectiveness of dry supplementary pollination.

Planning ahead is critical. If poor weather is forecast during peak flowering, it pays to have a strategy in place before it arrives, rather than reacting once conditions have already turned.

In these situations, wet pollination is typically the most reliable option. Unlike dry pollen, a wet suspension can be applied across a wider range of conditions, including rain, cooler temperatures and overnight as it doesn't rely on bee and insect activity. This flexibility becomes especially important for short-flowering cultivars such as Gold3 and Red19, where the receptive window may only last two to three days.

Make sure your pollen is stored correctly and ready to go at short notice. Even a small break in the weather can be enough to get an application on, and being prepared to act quickly can make a significant difference.

It's also worth remembering that supplementary pollination delivers the most value in these conditions. A well-timed wet application, even in less-than-

Testing wet pollen spraying in the orchard.

ideal weather, can be the difference between achieving a commercial crop and falling short.

What is ploidy and why does it matter?

Ploidy refers to the number of chromosome sets in a plant, and it plays an important role in kiwifruit pollination.

Different kiwifruit varieties have different ploidy levels. Hayward is hexaploid (6x), Gold3 is tetraploid (4x), and Red19/80 are diploid (2x). This matters because pollen compatibility depends on these levels.

As a rule of thumb, pollen can fertilise flowers of the same or lower ploidy but not higher. That means:

- Hexaploid pollen (green males) can fertilise green, gold and red;
- Tetraploid pollen can fertilise gold and red;
- Diploid pollen is limited to red varieties only.

In practice, most commercially available pollen in New Zealand comes from hexaploid green males such as Chieftain and M36. This means compatibility is rarely an issue for growers at present.

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However, this could change over time. If new pollen sources become available, particularly diploid pollen for red varieties, it will be important to check compatibility before application. Getting this wrong could result in poor seed set and reduced crop performance.

Do I need to sieve my pollen before use?

Whether you need to sieve your pollen depends on how it has been processed and how you plan to apply it. Not all commercially produced pollen is processed to a level where residual anther filament material has been fully removed, meaning it isn't always ready for direct use without sieving. Some pollen will still contain small amounts of fibrous material from the milling process. While this might not always be obvious, it can cause problems once you (or your contractor) start applying it.

In dry systems, this material can block augers or disrupt flow, leading to uneven distribution across the canopy. A quick pass through a handheld sieve before loading the applicator helps remove this debris and improve consistency.

The same principle applies to wet systems. Sieving before mixing the pollen reduces the risk of blocked nozzles and avoids interruptions during spraying, something you want to avoid during a tight flowering window.

A quick sieve before use can save a lot of frustration once you start applying pollen, particularly if there's any residual filament material left in the product. If you're unsure how clean the pollen is, check with your supplier, but in most cases, sieving is a sensible precaution.

Where can I get more information?

For more details on how supplementary pollination could be useful in your orchard, including links to research, products, and advice, go to **www.kiwipollen.com** and Zespri's Canopy page "Understand Pollination and Pollination Systems" and the Kiwifruit Pollination Manual. ■

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We are Chartered Accountants and kiwifruit farmers too.

The orcharding year has come full circle and starts again with winter pruning. As we all know YIELD, TASTE, and TIME are the Big Three drivers of orchard profitability.

WINTER PRUNING is a function of Yield. To achieve a consistent high yield of high quality fruit there must be a consistent canopy fill across all bays on the orchard; and the appropriate number of high quality winter buds. Winter pruning requires hands-on management with close supervision. High performing orchards ensure that every vine is performing to its maximum and this potential is set at winter pruning time.

We would love to hear from you:
07 578 1888 or tim@maystonpartners.co.nz
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